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ABSTRACT

Provided are 17 papers presented at the American Educational Research Association's (AERA) 1977 Symposium on Educational Acceleration of Intellectually Talented Youths. Following introductory comments by H. James are entries with the following titles and authors: "Educational Acceleration of Intellectually Talented Youths--The Gifted and the Creative: Acceleration or Enrichment?" (R. Havighurst); "Acceleration--Simplistic Gimmickry" (M. Gold); "A.E.R.A. Symposium on Intellectually Talented Youth" (H. Robinson, et al.); "Educational Acceleration of Intellectually Talented Youths" (S. Daurio); "Selection of Appropriate Criteria and Comparison Groups for Use in the Evaluation of Educational Provisions for the Gifted and Talented" (A. Branch); "Acceleration--A Varied Approach" (E. Kearney); "Acceleration and Enrichment for the Gifted in New York City Public Schools" (V. Ehrlich); "A Possible Economic Correlation of Acceleration for the Individual and for Society" (D. Jackson); "Super Students, Average Schools" (S. Anderson); "Acceleration and the Excellent Mathematical Reasoner" (W. George); "Sexism, Democracy, and the Acceleration Versus Enrichment Controversy" (L. Fox); "The Acceleration/Enrichment Debate--Basic Issues" (D. Keating); "Educational Acceleration of Intellectually Talented Youths--The Mathematical and Physical Sciences" (E. Gibb); "Some Reflections on the Acceleration-Enrichment Controversy" (A. Anastasi); "Brief Paper for Symposium on the Educational Acceleration of Intellectually Talented Youth" (J. Stark); and "Acceleration Versus Enrichment--The Tenth Rule of Three Cubed" (A. Kurtz). (SBH)

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INTRODUCTORY COMMENTS - HIGHER EDUCATION

Symposium on "Educational Acceleration of Intellectually Talented Youths"

by

H. Thomas James, President
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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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April 7, 1977
American Educational Research Association
New York City

When I left Stanford University in 1970 to join the Spencer Foundation we talked at length about how a foundation with modest resources might be most effective in the improvement of education. We had noted the pendulum-like swings of interest so characteristic of the world of education and decided that one way to be useful was to try to find a counter-cyclical position from government funding. With government funding at an all time high for studies and assistance to the handicapped, the disadvantaged, and the variously deprived child, we were pleased to find early opportunities to fund studies of the mathematically and scientifically precocious, the verbally and humanistically gifted children. Last year after our first six years of operation we asked a distinguished scholar of the field to review our investments in studies of the gifted. He noted that the field of talent study had been virtually dormant, and noted three independent events that suggested it sprang to life again in the early 1970's. "The first was the development of the study of mathematically precocious youth at Johns Hopkins University by Julian Stanley and his colleagues. The second was a bequest to the American Psychological Foundation by Mrs. Esther Katz Rosen, who directed that the income from the endowment should be used for the study of gifted children. The third was a too-long delayed followup of the Terman gifted children in 1972." Since then other

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indicators of reviving interest are appearing, notably the Social Science Research Council's series of conferences which may be signalling a sustained interest by the illustrious body in the study of talent; and a recent "Tuesday Morning at the White House" discussion of giftedness, which in turn may signal more funding from government sources for this field of study and practice.

Our society is deeply ambivalent about its two most fundamental values, which are liberty and equality. On the one hand we argue for the libertarian right of each individual to develop his capacities to the highest level of which he is capable. On the other we argue for the egalitarian right of equal opportunity for all. In recent decades the egalitarian emphasis, especially in the political arena, seems to have gained. Yet we live in a vastly complex technological society with insatiable demands for talented people to keep it running. Talent does not develop in a vacuum; it needs nurturing, and to ignore its nurture is to imperil our way of life.

Elbert Hubbard once said, "There is something that is much more scarce, something finer far, something rarer than ability. It is the ability to recognize ability." I am most happy to be in this company, where at least we are learning better ways to look for the very able, and perhaps how best to recognize and nurture great talent. I look forward with great interest to the discussion to follow.

3/9/77

AERA Symposium
Robert J. Havighurst
The University of Chicago

EDUCATIONAL ACCELERATION OF INTELLECTUALLY TALENTED YOUTHS
THE GIFTED AND THE CREATIVE: ACCELERATION OR ENRICHMENT?

In order to discuss this topic usefully, we need a quantitative and a qualitative definition of the group of children and youth to whom we refer. If we use a broad definition of the "intellectually gifted," we might speak of 10 percent of an age cohort, or some 350,000 boys and girls of a given age. In that case, most educators would say that the emphasis should be upon enrichment of the educative experience, with perhaps as much as a one year acceleration in progress through the school grades. But we must use a much more selective definition.

Following Stanley, we may speak of the "intellectually talented" as a subgroup of those 12 and 13 year-olds who score in the top 5 percent for their grade on national norms in mathematics and verbal reasoning. Those boys and girls then take the College Entrance Examination Board's Scholastic Appitude Test, and some ten percent of them score higher on this test than the average college freshman. Thus we select about 0.5 percent of the age-group at age 12 or 13 who are "intellectually talented" in mathematics. If we add another equal-sized group who score equally highly on science but not so high on mathematics, we get about one percent of the age group, or 35,000 boys and girls whom we define as "intellectually talented."

For this group I would argue that three or more years of acceleration at the age of about 15 are useful. That is, they might enter college as freshmen at the age of 15. This would assume that they had completed high school level courses in mathematics and science and English, or passed examinations for such courses. As for enrichment, this group probably would have experienced some of what Stanley calls "relevant" enrichment, which would be special work in mathematics or science or some other academic subject area in which they were specially interested.

However, for young people in the top ten percent on tests of knowledge and aptitude, who are often called "gifted" but are not in the top one or two percent, I would argue for what Stanley calls "cultural" and "relevant" enrichment plus one or two years of acceleration. The acceleration might be gained by skipping one or more grades, or by taking "advanced placement" courses in high school, which would permit entrance to college with up to a year of college credit.

This would leave those just below the top one percent in a category that would

be treated according to their social maturity, and motivation for academic work.

As for the contention of many educators who oppose "radical" acceleration on the ground that it may damage the social and emotional development of the students who are accelerated, this is an important issue. There often are disadvantages to academic acceleration of 3 or more years, especially during early adolescence, and these must be weighed against the disadvantages to intellectual development of "holding back" a gifted student.

The pros and cons of acceleration should be explored by any conscientious educator, perhaps by reading the case studies of young people (Hollingworth, Hildreth, Strang), also by reading the few autobiographies that are available. An especially good autobiography is that of Norbert Wiener, the mathematician who was a child prodigy, and was ambivalent about his boyhood experience. Also, the autobiography of John Stuart Mill is useful in this connection.

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Acceleration: Simplistic Gimmickry

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When I am asked "Why hasn't gifted child education progressed any faster than it has?" I usually respond, "There are several reasons undoubtedly, but I am certain that heading up the list is overdependence on one or another of three words: enrichment, segregation, and acceleration. Adherents of each term have in their way done much to slow the progress of gifted child education.

The problem with enrichment, is that it conveys no meaning. Indeed, one administrator opined: "Enrichment is that term educators hide behind when they don't want anyone to know they are not doing anything for the gifted." To some, enrichment means learning to type in the 4th grade; to others, mastering Haiku; to still others, it connotes 20 spelling words instead of 10, two compositions in lieu of one.

Segregation implies the setting apart for all or part of a day, a year, or an academic career. It could be partial or it could be total.

Acceleration refers to some form of speeding up - early admissions, double promotions, ungraded primaries or junior high schools, entering college early - a wide variety of options is possible.

When one talks about the educational value of the above three alternatives - and from this point on, I shall confine myself to the concept of acceleration only - it is like talking about the value of a hammer: straight against a nail into one beam to be joined to another there is some significant value to the hammer's effect; against an infant's skull, the hammer's drive would be of questionable worth. The problem then lies not in the tool, acceleration, but in the product to be built, curriculum.

Unfortunately, too often school administrators seize upon an overly simplistic approach to gifted child education and look for an administratively manageable answer. Grabbing hold of acceleration, a "how" device for implementation it is quite easy to forget the "what" of the educational effort - the curriculum.

Complex concepts such as futurism, productive thinking, creativity, leadership training, critical thinking, and the like all become second class citizens in the educational country where quick simple answers are likely to rule unchallenged.

No, I am not against acceleration any more than I am against the hammer or motherhood or the flag. Decent parenting or a flag that has meaning are certainly most worthwhile - as worthwhile as acceleration is that moves a gifted child's education forward meaningfully. Biological motherhood or phony patriotism, however, are as meaningless as the "speeding up of something" of little value within the world of education.

Let's attend to the "what" of education first and only look at the implementing methods - the "how" - second. Otherwise, we are forcing ourselves to live with some form of simplistic gimmickry or another.

A.E.R.A. SYMPOSIUM ON INTELLECTUALLY TALENTED YOUTH

Halbert B. Robinson, Ph.D.
Nancy E. Jackson, Ph.D.
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Few fundamental principles of human behavior are as logically compelling and empirically verifiable as the dicta, first, that learning is facilitated by an appropriate match between the material to be learned and the learner's level of relevant cognitive organization, and second, that there exist substantial differences in performance on any learning task among individuals of the same chronological age. The notion that each child is, at any given moment, ready for some kinds of learning experiences and not for others is obvious. Equally incontrovertible is the notion that such readiness is imperfectly correlated with chronological age.

Sensible educational programs must certainly take cognizance of these fundamentals. Many do. Those with a single, well-defined goal -- to teach children to swim, for example, to play a musical instrument, or to speak a foreign language -- rarely give much prominence to chronological age. Learners are generally grouped by competence and tasks are typically tailored to their level of mastery. A ski instructor who placed all 6-year-olds in Snowplow I and all 12-year-olds in Advanced Parallel would soon learn the error of his or her ways.

It is, rather, the broadly based educational programs with multiple, often ill-defined goals, which magnify chronological age as the major criterion for class placement. As goals of the educational enterprise have proliferated, age-graded lock-step has become increasingly the norm. Without denying the complexities of the issues which are involved, it seems to us that in our efforts to deal with the "whole child", and indeed, the "whole society", we have been blinded to a broad range of intra- and inter-individual differences; we often fail to see specific and easily defined trees because we are so busy examining ambiguous forests with ill-defined boundaries.

The Child Development Research Group at the University of Washington has undertaken a group of projects concerned with the identification and

nurturance of young children who display extraordinary intellectual abilities. By age five, the usual age for kindergarten entrance, a typical child in our program is reading at the level of the average fourth grader and is about as proficient in mathematics as the average beginning second grader. This child's fine motor skills are average and his social skills are also judged to be about average. To place this child in an average kindergarten would surely lead to inappropriate matches with respect to some important areas of development; placing him in the third or fourth grade would lead to equally distressing mismatches with respect to other important areas.

The problems posed by intra- and inter-individual differences are not, however, impossible to resolve. Other speakers today have reviewed the evidence on such topics as early admission, enrichment and acceleration. The overwhelming weight of the evidence indicates that placement according to readiness rather than age facilitates learning and also the general adjustment of the children. We cannot, of course, pretend that we know all that we need to know about the long term social, emotional and cognitive consequences of placing children according to indices of readiness. The data have been, however, consistently encouraging.

A final thought concerns the formulation of the topic we are here to discuss: The educational acceleration of intellectually talented youths. I wonder why we are concerned with the idea of acceleration at all. I have never known a gifted child whose education in the area of his or her "gift" seemed truly accelerated. I have known a very few such children lucky enough to have parents and teachers who allowed them to proceed at their own pace, but most have had to deal with systematic and, I think, unconscionable attempts to decelerate their education. The costs of such practice to the children and to society have, I believe, been very substantial. I submit that we should at this point be attending to the detrimental effects of continuing to decelerate the educational progress of intellectually talented young people.

AERA Symposium
Stephen P. Daurio
The Johns Hopkins University

EDUCATIONAL ACCELERATION OF INTELLECTUALLY TALENTED YOUTHS

The controversy over whether to enrich or accelerate the education of intellectually able students appears to be an artifact of chronological age-grading in American schools. The question immediately arises, "What if students were grouped according to mental age instead of chronological age?" A likely outcome would be the end of the enrichment-acceleration debate because, theoretically, all students would be working according to intellectual ability rather than chronological age. Why then has this seemingly obvious solution not been adopted?

The answer apparently lies in the following two considerations. First, educators tend to associate age-grading with educational reform and support the idea that it is better for children to interact with same-aged peers in school and in play. However, according to the historian Joseph Kett who served on the President's Science Advisory Committee in 1974, age-segregation started in the mid-nineteenth century as a by-product of the educational reform movement led by Horace Mann and Henry Barnard. Similarly, age-grading was coincidental with American industrialization and antedated the rising tide of immigration by only a few years. Age-grading was also well-suited to the Americanization of immigrants' children following the great "melting pot" tradition. In addition, during times of economic prosperity educational certification offered a kind of ticket for upwardly mobile poor children. Elementary schools, and, later, high schools provided practical training demanded by increased specialization in industry. Conversely, during the Depression of the 1930's age-grading was defended as a "cure" for unemployment. Thus despite the fact that many educators believed over the years that age-grading served the best interests of educational reform, the fact remains age-grading also served the the economic and political needs of a growing nation. Since it is difficult to disentangle these utilitarian goals from better-intentioned goals like reform, the value of age-grading has yet to be proved for today's students. And considering the relative recency of this "tradition", that is, approximately one-hundred years or less, the value of age-grading doubly is called into question.

The second observation involves educators' excessive concern over potential social and emotional maladjustment following acceleration. It seems an inordinately disproportionate amount of caution vis à vis acceleration stems from the rather

unfortunate case of William James Sidis. However, Leta Hollingworth, Catherine Cox Miles, and, more recently, Kathleen Montour have documented numerous counter-examples of successful prodigies whose lifetime adjustments and professional careers were outstanding. In addition, the ongoing Study of Mathematically Precocious Youth at The Johns Hopkins University reports successful college experiences for seventy-one young men and women who entered college at least one, and as much as six years early. In fact, a recent review of the acceleration literature failed to turn up a single substantive study that refuted the appropriateness of acceleration for intellectually able youngsters who were eager to move ahead at rates faster than the conventioanl lockstep would allow.

Educators' concern over social and emotional adjustment might also be due to what Frank Laycock calls their "selective" use of evidence despite the wealth of "representative" literature supporting acceleration. According to Laycock, "Administrators have reported the cases they remember best, while psychologists have insisted upon good samples." In other words, administrators reluctance to endorse acceleration may well simply reflect their individual biases in this matter.

Whatever the reason acceleration meets opposition in schools, the unwarranted disregard of empiricism concerning the effects of acceleration ought not jeopardize the education of intellectually talented youths.

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Selection of Appropriate Criteria and Comparison Groups for use in the Evaluation of Educational Provisions for the Gifted and Talented

Alvia Y. Branch

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This paper does not take a position with respect to the superiority of either acceleration or enrichment as a means of providing for the educational needs of gifted and talented students. Rather, it points to needed research and evaluation necessary to assist teachers, administrators, and parents in making a better informed choice between these alternatives. Because acceleration (particularly the 'radical' acceleration of relatively young students) has been met with the greatest resistance and, in this sense, bears the greatest onus of proof, most of the comments contained herein are directed toward issues related to the educational acceleration of gifted and talented students. The major argument to be presented is that many individuals involved in assessing the effectiveness of acceleration have chosen strategies which, in view of the intensity of the resistance they must counter, are overly conservative. This is reflected in both the selection of comparison groups and in the selection of criteria for use in determining the extent to which successful educational facilitation has been achieved.

When we consider that the image in need of correction is one of lives horribly distorted in service of the development of a single 'gift,' comparisons of the academic achievements of accelerated students versus those of (1) their classmates and (2) their age-mates (both unselected for ability) do not constitute a sufficient counter. Equal or greater academic achievement among the accelerates might be expected solely on the basis of intellectual ability.

Statement prepared for the Symposium on Educational Acceleration of Intellectually Talented Youth, Annual Meeting of the American Educational Research Association, April 7, 1977

Yet, most research into the effects of acceleration has made precisely these comparisons, belaboring a point which many opponents would be willing to concede. The only comparison potentially capable of generating data which can chip away at the bulk of resistance to acceleration is a comparison between comparably 'gifted' students, accelerated and non-accelerated. It seems feasible to make such comparisons in terms of scientific requirements and in terms of ethical considerations. Because of the scarcity of funds, many gifted students (regardless of ability levels) will not be exposed to qualitatively different and appropriate educational experiences. It is therefore appropriate to monitor the development of both groups, those who are and are not receiving such provisions, and to make relevant comparisons of their experiences. Only in this way can credible statements be made concerning the effectiveness of any intervention, whether enrichment or acceleration.

In addition to the correct comparison group, one needs to be concerned with the question being asked of the comparison. With respect to the criteria used in determining the success or failure of an intervention, many studies have employed one or a combination of the following: (1) ability to master courses in advanced subject matter, (2) demonstrations of 'no psychological damage,' and (3) demonstration of a high degree of participation in extra-curricular activities. Of these, the latter two come closest to confronting the essence of the resistance. However, in order to increase the likelihood of greater acceptance of acceleration as a means of providing for the educational needs of the intellectually talented, one needs to go beyond the demonstration of 'no psychological damage' toward demonstration of psychological benefit in excess of risk. The type of study indicated would follow closely the lives of children identified as gifted regardless of whether they were subsequently successful, and would allow the researcher to:

1. Investigate the possibility of substantially damaging effects of lack of attention to the educational needs of the gifted. In order to be most convincing, an investigation of this kind would involve comparisons of accelerated and non-accelerated

gifted students, or gifted students whose educations have or have not been facilitated. As it stands, available biographical data on the lives of geniuses or prodigies most often recounts triumph in the face of lack of attention to their special needs.

2. Look explicitly for positive effects of an accelerated or otherwise facilitated education. The emphasis of studies of this kind should be on in-depth analyses of personality and social variables thought to be associated with movement toward the fulfillment of potential. Again, comparisons would be made with students of equal ability whose educations have not been facilitated.

Clearly, Terman's discussion of the experiences of the A's (most successful) and C's (least successful) among the men in his sample approximates the kind of study being advocated here. Future studies along these lines, however, would be designed with sufficient controls to permit confident attribution of outcome differentials to the effects of acceleration.

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ACCELERATION: A VARIED APPROACH

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The term "acceleration" has triggered emotional responses for a number of years. Yet, there are numerous ways to accelerate the learning process, and many of those methods are supported by the same individuals who voice a reluctance to "accelerate a child." Because semantics plays an important role in this issue, many educators in California avoid the term while implementing the process.

Dr. Julian Stanley stated that academic acceleration allows students to advance through subject areas at a rate that may, or may not, alter their progress through the grade structure, and with this view in mind, directors of programs in California have tried to provide many channels of acceleration to the identified gifted.

Pasadena introduced its first gifted class the year after Lewis Terman began his now famous study, and under the direction of Miss Grace Ball (Director of Special Programs), the teachers stressed an educational process that allowed students to explore in depth and at advanced levels those areas in which they were academically accelerated while keeping them with their intellectual and chronological peers for the major portion of the school day. Grant school was staffed by teachers willing to serve as facilitators and mentors, and, according to Miss Celia Johnson (one of the first teachers in the program), "The children were happy, and the parents endorsed the plan enthusiastically." Despite parental support, public pressure resulted in the school's closure in 1943, and less isolated means were sought to provide for the needs of the gifted population.

The 1950's saw the end of another plan. The "6-4-4" plan provided a grade grouping (K-6, 7-10, and 11-14) that was most beneficial to the gifted who could take classes one or more years beyond grade level as a matter of course. Unfortunately, community college districts formed and the plan disappeared.

By 1963, the state had set up a funded program for gifted students, and a research project funded by the Cooperative Research Branch of the U.S. Office of Education was underway. This $249,000 grant aided in the development and demonstration of special program prototypes. Six model school districts demonstration

Centers were established and materials and curricula prepared to aid educators interested in providing acceleration, special classes, and counseling programs for the gifted. Project Talent (the title of the project) ran from 1963 to 1966 in Davis Joint Unified, Lompoc Unified, Los Angeles Unified, Pasadena Unified, Ravenswood City, and San Juan Unified school districts, and the results were published in a series of booklets and subject matter guides.

One of these publications, Acceleration Programs for Intellectually Gifted Pupils set forth the results, and the following report was made on the portion of the research program conducted in Pasadena:"The high achievement and the successful adjustments made by accelerants...confirmed the report(s) of... other studies. Standardized test results should be studied in relation to pupils' progress...to determine the level of academic talent needed for success in the program, characteristics of pupils, such as motivation, that are not measured by standardized tests but which play important roles in pupils' success...should be identified for use as guides by those responsible for the selection of participants, ...and the purpose and function of counseling should be delineated...." It was noted that a follow-up study should be conducted, but,unfortunately, none was.

Money shortages promote innovation, and this is sometimes an advantage. The need to provide suitable educational opportunities coupled with an inability to fund major projects has resulted in programs that provide acceleration by permitting students to challenge courses, take Advanced Placement programs, enroll in advanced classes, do independent research, take seminars, work independently under the direction of mentors (staff and/or community), take early graduation, and/or serve as Career Interns prior to graduation. By using a variety of approaches to acceleration, schools throughout California have been able to insure that the brightest of their students are being given an opportunity to receive an education that is truly designed to meet their needs.

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ACCELERATION AND ENRICHMENT FOR THE GIFTED IN NEW YORK CITY PUBLIC SCHOOLS

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There is scarcely a technique that the literature describes in meeting the needs of the gifted that has not been tried at some time or other in the New York City public school system. With a population of 1,100,000 children, 638 elementary school buildings, 174 intermediate and junior high school buildings, 110 high schools, and 60 special schools at its disposal, the system has opportunities for educational experimentation that are available to no other community.

It is, therefore, not surprising that its concerns for the gifted are recorded for as early as 1899, when the then Superintendent of Schools Maxwell (1) urged that " . . . what is wanted is a system by which the bright child shall receive instruction according to his brightness and the slow child according to his slowness, . . . ;" or that it was in the New York City school system that Leta Hollingworth conducted her studies for the gifted at P.S. 500 Manhattan, known as the Speyer School.

The system took careful note of Terman's work in California and implemented its own programs, based on many of his observations and recommendations. Our early classes for the gifted were called "Terman" classes, the first being established in 1917 at P.S. 64 Manhattan.

The practices of the city reflect Terman's (8) position on acceleration:

"The facts I have given [referring to the Ford Fund report on acceleration] do not mean that all gifted children should be rushed through school just as rapidly as possible .... I do believe, however, that such children should be promoted rapidly enough to permit college entrance by the age of 17 at latest, and that a majority would be better off to enter at 16." (p.49)

This leads us to a definition need. Acceleration, as Terman was using it, referred to "grade acceleration". Gallagher's (3) definition of acceleration applies: "any procedure which makes it possible for a student to complete his work in a shorter-than-normal period of time," and this can include early admission to kindergarten, grade one or college, skipping grades, or combining the work of two semesters or two years in one. Stanley's concept of academic acceleration, advancement in a given subject area or group of subjects, may occur with or without changing the rate of the pupil's progress through school.

A combination of both grade and academic acceleration seems feasible, and, in fact, is the method that New York City has used successfully for many years, combined with enrichment.

Enrichment, again using Stanley's (7) view, i.e., "any educational procedure beyond the usual ones for the subject or grade or age that does not accelerate or retard the student's placement in the subject or grade," has and does play a part in both accelerated and non-accelerated programs.

Thus, briefly, we have in New York City the following practices.

The general policy is that it is not desirable to grade accelerate a child more than one year in elementary school and one year in junior high school.

Grade and academic acceleration at both levels are preferred by completing the work of two years in one. In the elementary schools, this usually occurs in grades 2 - 3. At junior high school, it occurs by combining grades 7 - 8 - 9 into an SP (Special Progam) class for two years.

We used to have a three-year senior high school (Townsend Harris), but it was discontinued, much to the regret of many alumni.

Early admission to kindergarten is not commonly practiced. Since 1974, the Astor Program (2), which I have directed, has introduced the practice of accepting gifted children to kindergarten at age 4 years instead of the 4 years and 8 months normally required. Local school districts are currently considering extension of this practice into their regular procedures.

Our specialized high schools, honors programs in our academic high schools, and special skills programs in our vocational high schools all rely heavily on "academic acceleration" combined with "enrichment." They also take advantage of the Advanced Placement Programs for obtaining college credit while the student, technically, is still attending high school.

Enrichment is practiced at all levels. At the elementary level, we have homogeneously grouped classes for the intellectually gifted, usually in grades 4, 5, and 6; and sometimes in grades 1 to 3. Special pull-out programs in selected subject areas are also available in, for example, science and mathematics, music, reading, etc.

At the junior high level, SPE (Special Enrichment) classes are homogeneous groupings, where enrichment in the usual curriculum areas is provided and foreign language is added to the curriculum. Our specialized high schools and our honors programs provide many opportunities for enrichment within subject areas or by including additional curriculum areas at higher levels of difficulty. (This may be considered academic acceleration as well.)

At the college level, which is part of our public education system, summer session and evening classes do make acceleration possible. Plans for reducing the eight years of high school and college to six or seven years are being considered.

At the college and graduate levels, the trend toward shortening the educational process is also to be noted. A few years ago, City College undertook a program to accelerate the training of lawyers in cooperation with the New York Law School, thus reducing the seven-year sequence to six years.

It is apparent that New York City implements the moderate practices of acceleration advocated by Terman and studies made since the Terman era.

Like others in the country, New York City has increasingly resisted programs for grade acceleration. The disbanding of Townsend Harris High School, the limited use of acceleration in the elementary school, the discouragement of SP junior high classes in favor of the slower paced SPE, are all indications of the city's vulnerability to the prevalent opposition to grade acceleration, in spite of results of research studies that support the concept.

In considering this dilemma of "objective data" versus action and reaction, I think we need to go back to our sources. Frequently, the generalizations we apply in our fields are so removed from the originator's intent, that distortion creeps into our interpretations.

An example of this occurred in my own experience with a class of teachers of the gifted. Justman, co-author of the study on "The Effects of Ability Grouping" (5), spoke to the group and explained the effects of homogeneous versus heterogeneous groupings. There was a strong movement away from homogeneous grouping at the time, based on the belief that it was of no benefit to the student. After Justman's presentation, I asked the class of over 40 students whether: 1) they recalled the generalization; and 2) what condition Justman and his colleagues had placed on the generalization. Not one of the forty plus teachers recalled that Justman had clearly stated that homogeneous grouping did make a difference in classes where changes in teaching and curriculum took place.

Recalling this, and similar research experiences, it seemed wise to re-read Terman's original statement. He clearly warns against rushing gifted children through school as rapidly as possible. (See page 1). Moderation seems to be the key concept.

Gallagher (3) summarizes by stating: "The recent research on acceleration has done nothing to change the generally favorable portrait of these methods of moderately shortening the educational career of talented youth." Note his use of the word "moderately." He had previously noted Farnsworth's recommendation that "students should not be accepted [to college] unless they complete the eleventh grade, and that they should have emotional maturity consistent with their ability and be free from excessive parental pressure." (p. 100).

Although the broad generalizations concerning acceleration may be supported by ample research evidence, it behooves us to note the impact of such a procedure on a sufficient number of students whose reactions were not so favorable. When we are dealing with such a select population, we cannot confine ourselves to observations based on "averages", "majorities", or other statistics, without noting the effects on those who are not included in these counts.

I cannot agree that we are wise to push youngsters into a college environment when they are eleven to fourteen or fifteen years old. I do not feel that we have evidence to show that this is a beneficial procedure, and I do know that the biographies and autobiographies of those who were thus pushed reveal tragic undertones that we cannot ignore.

In our passion for objective evidence and scientific research data, we should not abandon the observations derived from years of experience and applications of common sense. Any seasoned researcher will agree that many of the most successful psychological studies are the results of applied "educated" guesses based on the prepared mind. Except for fortuitous and serendipitous discoveries, most studies yield results which are consistent with what our trained observations would have expected.

Nor can I overlook the pleas of those many gifted personalities who have told us, subtly or directly, what a terrible price they paid for their intellectual race through childhood. Great as their achievements may have been, these intellectual giants lost large portions of their childhood and youth. Let two of the most noteworthy, speak for themselves.

John Stuart Mill: Autobiography (6)

"It was in the autumn of 1826. [Age 20] I was in a dull state of nerves, ... In this frame of mind it occurred to me to put the question directly to myself: 'Suppose that all your objects in life were realized.... would this be a great joy and happiness to you?' And an irrepressible self-consciousness distinctly answered, No!"

"At first I hoped that the cloud would pass away of itself; but it did not. ... For some months the cloud seemed to grow thicker and thicker.... My father, ... was the last person to whom, ... I looked for help. Everything convinced me that he had no knowledge of any such mental state as I was suffering from, ... My education, which was wholly his work, had been conducted without any regard to the possibility of its ending in this result; ...

"... All those to whom I looked up, were of the opinion that the pleasure of sympathy with human beings, and the feelings which made the good of others, and especially of mankind on a large scale, the object of existence, were the greatest and surest source of happiness. Of the truth of this I was convinced, but to know that a feeling would make me happy if I had it, did not give me the feeling. My education ... had failed to create these feelings in sufficient strength to resist the dissolving influence of analysis, ... I was thus ... left stranded at the commencement of my voyage, with a well-equipped ship and a rudder, but no sail: ..."

Norbert Wiener: Ex-Prodigy (9)

"From him [my father] I learned the standards of scholarship which belong to the real scholar, and the degree of manliness, devotion, and honesty which a scholarly career requires. I learned that scholarship is a calling and a consecration, not a job. I learned a fierce hatred of all bluff and intellectual pretense, as well as a pride in not being baffled by any problem which I could possibly solve. These are worth a price in suffering, yet I would ask this price to be exacted of no man who has not the strength to stand up to it physically and morally. This price cannot be paid by a weakling, and it can kill. That I was a boy not only endowed with a certain intellectual vigor, but also physically strong, made it possible for me to bear the wounds of this Spartan nurture. Before I should even think of subjecting any child, boy or girl, to such a training I should have to be convinced not only of the intelligence of the child, but of its physical, mental, and moral stamina.

"Even if we take this stamina for granted, it is a special treatment only to be employed where no ordinary treatment is adequate to the needs of the case."

It is my belief that lay response and resistance to the concept of acceleration in grade is based on an intuitive awareness of the sad lives these outstanding personalities have led, and on our own inadequate presentation of the case. We have not made clear the difference between the moderate acceleration recommended by Terman and implicit in studies

favoring acceleration and the unnatural race through intellectual experience to which Mill, Wiener, and Sidis and others were subjected.

Nor do I think we have made clear the advantages of intellectual acceleration, or pacing, in keeping with the child's ability, within the framework of the normal environment of age peers.

The problem, in part, lies with the "establishment's" inability to restructure itself, so that it can truly deal with students as individuals in terms of their capacities and needs.

We have tried to do this in the Astor Program, where children ages four to five and one-half are brought together with their intellectual peers in a full-time program. They may advance intellectually as much as they wish. Grade barriers in subject matter are disregarded. But, they spend their days with children whose social, emotional, and physical maturity have a common base of age. After three years in this environment, we find that our pioneer children are happy, contented human beings, with their intellectual hungers satisfied. They have set their own pace of intellectual growth in a receptive and responding environment . We anticipate that many, who have top intellectual abilities, will become the great men and women of the future. We hope they will review this part of their childhood without the heartaches implied in the biographies of such great men as Wiener and Mill.

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A POSSIBLE ECONOMIC CORRELATION OF ACCELERATION FOR THE INDIVIDUAL AND FOR SOCIETY

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It is the purpose of this brief paper to raise some economic questions about the consequences of acceleration to the individual and to society in general. I believe the case for acceleration is well made in the research literature provided by Professor Stanley for this symposium, and that our current need is for arguments to convince educators, parents and others that they should act to assist larger numbers of well-qualified young people to move much more rapidly through the formal educational system. Thus, I seek arguments in the economic sphere in hopes of reducing professional and parental resistance to acceleration. What follows is an attempt to develop some economic arguments from possibilities which exist as a result of the operations of the Advanced Placement Program of the College Entrance Examination Board.

The Advanced Placement Program offers an existing practical means by which a boy or girl of high ability and achievement can accelerate his or her progress in formal education. Three grades of "3" or better on three or more Advanced Placement examinations are sufficient in the case of many colleges and universities to support an offer of sophomore standing to the entering student. How many 17- year olds are currently using this method of acceleration? College Board records support an estimate of 3000 in 1976. If we assume that 2%, or 80,000 students, of the age cohort of about four million could do so, the current rate is estimated at only 3.75% of that potential.

What are some of the possible economic consequences of raising this number? Each individual who saves one year of college attendance, at an average cost of $7500, and instead is gainfully employed for one year at a salary of $193 per week will pay federal income tax of a little more than $2000. Thus, if the other 96.25%, or 77,000 students, of those capable of one year's acceleration followed this pattern, the Federal Treasury would gain $15.4 million. Gains to individuals ($7500 in savings plus $10,000 in earnings) would amount to a total of $140 million.

To specify the economic consequences of this pattern of acceleration precisely, studies are needed on questions such as these:

1) How many accelerated students work for a year before college? What is their employment experience, in terms of wages, types of work, etc.?

2) How many accelerated students enter the labor market after completing one or two degrees? What is their employment experience in terms of wages, types of work, etc.?

3) What is the incidence of frustration among students who are capable of using this method of acceleration, but who do not do so? In how many cases does frustration lead to dropping out?

4) Do accelerated students persist longer in graduate study than equally able non-accelerated students?

There seems little doubt, however, that acceleration of the type cited leads to some redistribution of funds, mostly to the advantage of students and their families.

April 7, 1977

Super Students, Average Schools*

Scarvia B. Anderson, ETS

I remember a few years ago going to a junior high school in New York City to give a workshop on errors of measurement or something equally irrelevant. "Irrelevant" in the face of more pressing problems for a school lacking a piano, few books with copyrights later than the early 1900s, an adequate counseling staff, or any regularly credentialed mathematics teachers even in the so-called math honors program. Notions that exceptionally able boys and girls would be identified there -- what's more enriched or acquainted with opportunities for acceleration -- would be about as irrelevant as my workshop was.

Pianos and books are relatively easy to come by. Highly competent and dedicated personnel are not -- especially in such a specialized field. Yet any large-scale provisions for the intellectually gifted are going to have to depend on availability in, or to, local school districts of personnel with skills in measurement, counseling, guidance, instruction, and even public relations for the intellectually talented. Complementary personnel with complementary skills in

1. early identification of extraordinary intellectual talent;

2. guiding the talented toward appropriate activities in light of such factors as their present cognitive and emotional development, interests, and family press;

3. identification and development of internal and external sources of intellectual stimulation and enrichment for these students; and

4. providing such intellectual stimulation locally in at least some educational areas.

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*Comments at symposium, Educational Acceleration of Intellectually Talented Youth, American Educational Research Association, New York City, April 7, 1977.

Stanley has said that teacher judgments of mathematical talent are woefully unreliable. He and his colleagues have gone to their own formal and informal systems of identification -- systems that are relatively independent of the schools. One suspects, too, that one of the reasons the SMPY staff are so dedicated to acceleration rather than enrichment is mistrust of the ability of many local teachers to provide true enrichment as opposed to Mickey Mouse activities. Acceleration offers greater opportunity for use of experts outside the system, or at least teachers acknowledged to be at higher levels within the system.

In addition to the problems of the competence of local school personnel to deal with highly gifted students, their families, and other institutions, there are also subtler issues on the local scene -- issues of attitudes. It is well known -- anecdotally at any rate -- that some teachers feel threatened by students who are brighter than they are in any respect. In school systems where there are large numbers of low achievers, there may be resistance and resentment if money and effort are "diverted" away from those judged "most needy." In many communities, too, high achieving students must contend with peer pressures and hostilities.

To summarize these brief remarks: As we discuss the role of school systems in furthering the development of intellectually gifted students, we must keep before us the realities of what the average school system <u>can</u> do now -- and temper our expectations for the future to the personnel and contextual problems that will have to be overcome if local environments for the gifted are to be invigorating rather than stultifying.

Acceleration and the Excellent Mathematical Reasoner

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As educators and specialists in the area of the gifted, we recognize that no two individuals are identical. Learning rates, academic skills, ability levels, as well as social and maturational levels vary from individual to individual. Still, many persons insist on an age-grade lockstep in our educational system.

It is the hypothesis of my colleagues and me at the Study of Mathematically Precocious Youth (SMPY) that acceleration of able youths who are eager to move ahead enhances their academic ability, motivation, career aspiration, social awareness, and creative potential. For example, Alex is a young man who will graduate from Johns Hopkins University this May (1977) at the age of 17 3/4 years. He is one of six young men in SMPY's program graduating from Hopkins during this school year who are between the ages of 17 and 19. If Alex had remained in the sequential lockstep, he would be graduating from high school this year. Before attending Hopkins Alex skipped three grades, took seven college courses, and earned a top grade of 5 on the difficult BC level Advanced Placement Program calculus examination. Recently he was one of five SMPY participants graduating this year who earned a National Science Foundation Predoctoral Scholarship with which to do graduate work. While still an undergraduate he solved a computer problem that had remained unsolved for a number of years.

Another individual, Tom, is also an NSF winner who will graduate in May from Hopkins. At age 18 Tom will receive his B.A. in theoretical physics with high honors (G.P.A. $\geq$ 3.90). In early March he presented a professional paper on "quarks" at an invitational Inter-American conference on theoretical physics

in Texas. Both young men were recently elected to Phi Beta Kappa. Would either Alex or Tom have found equivalent challenging and stimulating opportunities had they remained in high school? That seems overwhelmingly improbable.

Subject-matter acceleration is especially appropriate in the area of mathematics and the physical sciences (George & Denham, 1976; Stanley, 1976b; Fox, 1976, and Fox, 1974). Due to the sequential nature of mathematics it is easy for mathematically highly talented students to telescope the learning time for the precalculus sequence into one or two years. We at SMPY have demonstrated that fast-paced mathematics classes are an effective and stimulating way to learn mathematics. All of the 28 students who attended the second fast-math class will have completed at least calculus by the end of their senior year in high school. For many, this would not have been feasible without our program. Lucy Sells (1976) has shown that mathematics acts as a filter to self-select individuals, especially girls, out of professional careers. At least thirteen students in that class have completed the math sequence through Calculus III and differential equations at the college level before they were eighteen. Seven are presently attending universities such as MIT, Princeton, and Hopkins. Another two will enter college two years early during the academic year 1977-73. Individuals choosing not to continue mathematics or the mathematical sciences still have a good solid background with which to pursue other fields of interest such as electrical engineering or the natural sciences.

The type of acceleration will vary according to the needs of the student, his/her desire to move ahead, and the school situation. Acceleration is an alternative, I believe, that many students would select if given the opportunity. By insisting on slowing down the natural learning rates of highly able reasoners, we extinguish academic motivation and adjustment in the curricular areas where individual ability and interest are strong. Appropriate enrichment

as defined by Stanley (1976a) will lead to academic acceleration at some later stage in secondary school. Lehman (1953) points out the importance of early professional work and its positive relationship to creative potential. Would you insist that a student who can get a perfect score on the Cooperative Mathematics Test - Algebra I before studying the subject formally take 180 50-minute periods of Algebra I, anyway? Some school systems do. Recently sixty-five percent of 276 seventh or underage eighth graders who took a standardized Algebra I test in SMPY's talent search scored at least as high as 39% of those eighth graders in a national sample do after having completed a school year of Algebra I. Our group, however, was fifteen months younger and had studied no algebra per se. Thirty-six scored in the upper 5% of the national norm group.

As demonstrated by programs in states such as Minnesota and Maryland, administrative flexibility and acceleration should be important components of any school's program. In conclusion, acceleration and appropriate enrichment when blended together permit an eager, well-qualified student to proceed at a stimulating pace and at a high level of abstraction through a curriculum that he/she might not otherwise ever pursue well.

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Sexism, Democracy and the Acceleration Versus Enrichment Controversy

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If we define enrichment as the provision for learning experiences that develop higher processes of thinking and creativity in a subject area and define acceleration as the adjustment of learning time to meet the individual capabilities of the students, they are complementary rather than conflicting goals. If we assume that the goal of educational programs for the gifted is to meet their learning needs, both enrichment and acceleration are necessary. Thus, the gifted learner can proceed at a faster pace, to a higher level of content and more abstract and evaluative thinking than his age peers.

At the risk of overgeneralizing, we can conclude that the controversy over enrichment versus acceleration is partly a function of the specific curriculum for a given content area. By and large, the acceleration of learning in science and mathematics leads to higher levels of abstraction, more creative thinking, and more difficult content. In social studies and language arts the hierarchy of curriculum is less clear.

Another dimension of the acceleration versus enrichment argument involves the administrative level for instruction. If a gifted student is taught concepts of computer science, algebra, logic, a foreign language, and so forth,

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their own judgments over those of the school authorities. Thus, failure to provide systematic accelerative experiences in school for talented youths probably contributes to sex differences in later achievement. In one study, 48% of a group of mathematically gifted boys managed to accelerate their math progress in school by at least 1/2 year, whereas only 16% of a comparable group of girls accelerated their progress. A group of girls who participated in a program to encourage acceleration after grade 7 were, by the 10th grade, as accelerated as the boys and significantly more accelerated than the other female group. It seems likely that some disadvantaged gifted males also are held back by the system. Failure to provide accelerated experiences within school settings may actually be sexist and undemocratic.

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The Acceleration/Enrichment Debate: Basic Issues

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It is remarkably easy to become lost in a discussion of the relative merits and demerits of educational adjustments which are termed "accelerative," and others which are termed "enriching." What we risk losing are two important things: a useful perspective of the overall goals for the education of highly able students; and a sense of what it is possible to achieve in the real world of the schools as they exist in the present. Since many of the other symposiasts will undoubtedly address many of the important issues involved in the acceleration/enrichment controversy, I would like to make some simple (but I hope important) observations from the perspectives noted above.

If we step back for a moment and ask ourselves what is the single most compelling difference between gifted or high-ability students compared to more average students, it is quite obvious that it is the rate at which they are able to acquire and integrate new information, especially if the information is meaningful: high-ability students are faster. Evidence for this comes from long years of classroom experience with such students, from laboratory classroom studies which have been carefully controlled and conducted (Keating, 1976; Stanley, Keating, & Fox, 1974) and from experimental laboratory studies which indicate moderate rate advantages even for very basic information-processing parameters (Keating & Bobbitt, in preparation). A major goal for all students should be to expose them on a fairly regular basis to novel, challenging, and educationally relevant material. If this is to be accomplished for high-ability students, it will of necessity require a higher density of subject matter per time unit. Any educational facilitation which can provide this for high-ability

students is appropriate, and whether we choose to label this "acceleration" or "enrichment" is an administrative rather than an educational decision.

This brings us directly to the second constraint, however, which is that such adjustments do need to be made within the confines of the school, if we are to have practical and continuing programs in the foreseeable future. The implication of this is that such administrative matters are far from trivial. In counseling with high-ability students, in fact, a great deal of time must be spent on just such arrangements. If we look then at the most feasible adjustments for the vast majority of students right now, it will clearly be to move them ahead directly so that they have a reasonable chance of seeing material which meets the criteria of being novel, challenging, and educationally relevant.

Thus it seems to me that for the vast majority of students acceleration in the administrative as well as the educational sense will be the best option. This does not mean that we should cease efforts in other kinds of educational reforms that will also benefit their learning process. But such efforts should not divert us from doing meaningful things for current students. In particular, we often hear of the solution for such students being found in curriculum reform. Although such reform might be desirable, it will still be the case that there should be differences in the rate of exposure to any curriculum, because the individual differences among the students will surely remain.

Much of the acceleration/enrichment debate concentrates on a separable issue, however, and that is the possible <u>harmful</u> effects of moving ahead. These criticisms are reasonably arranged in two categories: possible negative effects on other areas of development, such as social or affective; and, second, possible negative implications for mathematics or science learning <u>per se</u>, the usual concerns being gaps in skills or superficiality. As for the former, social-

emotional concerns, it seems time to abandon them unless and until some solid reliable evidence is forthcoming which indicates real dangers in well-run programs. The evidence to date is that, try as we might, we can not detect such harm, although much research has been conducted along these lines (see Daurio, Chapter __ in this volume). One may question the accuracy of the research, of course (e.g., how to measure affective or social development effectively), but without some solid evidence of problems in this area, it seems unwise to abandon helpful measures because there may be problems elsewhere. A cost/benefit ratio works heavily in favor of active intervention on this issue, and orthodoxy alone argues against it.

On the second concern, mathematics or science learning per se, a similar situation obtains. Gaps in skills need to be demonstrated rather than asserted, and to my knowledge no convincing negative evidence exists here either. It certainly does not show up in the performance of the SMPY students (Keating, 1976; Stanley, Keating, & Fox, 1974).

The issue of superficiality is more difficult to dispel, principally, I think, because it is harder to operationalize. This argument can be an infinite regress. That is, one can meet each specific criticism with a demonstration, only to have it supplanted by another criticism demanding additional demonstration.

Criticism: These students are only learning specific rules for a given subject which they do not understand, and thus will lack ability to learn subsequent material.

Demonstration: They continue to do very well in subsequent courses, even difficult ones.

Criticism: They are learning only techniques, but do not have a good overall conceptualization of the subject matter.

Demonstration: Even in advanced, college-level theoretical courses, they outperform many bright but non-accelerated students. And so on.

One can eventually place the bar on the hurdle so high that no one can jump it, and we gain little knowledge from having done so. One specific criticism, for example, is that budding mathematicians may be deflected from following pure mathematics because of an accelerated program. This is a potentially researchable topic, but it will be difficult because of the very low base rate of pure mathematicians in the population, a point which is often overlooked. Longitudinal follow-ups by SMPY may eventually speak to this question, however.

Let me conclude by observing that well-run programs to facilitate academic talent through accelerative adjustments have substantial benefits but relatively few demonstrable costs. Like any educational technique, however, it is subject to abuse. Important components of well-run programs include selection appropriate to the particular facilitation under consideration, excellent and continuing counseling, and enthusiastic, competent teachers. A discussion of these components is beyond the scope of this paper, but if they are present, there is good evidence to believe that such facilitation will be beneficial to students currently. We should continue to seek the best route for educating such students, but accelerative adjustments are the closest contemporary approximation.

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EDUCATIONAL ACCELERATION OF INTELLECTUALLY TALENTED YOUTHS:

The Mathematical and Physical Sciences

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Should the talented in mathematics be provided with programs of enrichment or should these students have the opportunity for acceleration as commonly defined--skipping grades, fast-paced mathematics courses, enrollment in college courses, early admission to college and advanced placement in a mathematics program?

I support a program of enrichment with depth and horizontal development followed by acceleration as deemed desirable. My rationale for this position includes some specifications—the nature of the enrichment, the needs for effectiveness in mathematics, and the shortcomings of acceleration supported by research that might otherwise purport to support acceleration as the optimal management system for the education of these talented youth.

Divergent production is a necessary ability for success in mathematics. Also, creativity is a commonly identified trait of the gifted mathematics programs that place greater emphasis on advanced conceptualization not easily grasped by students at a similar age but of lesser ability, the development of higher level cognitive processes, opportunities for divergent production, and the fostering of creativity, including questioning, experimentation, devising new approaches, and testing results. At the same time, such programs should not become sterile, pedantic, and too intellectual. They should be designed for appropriateness of the maturity and interests of the learner whether at the elementary, secondary or collegiate level.

Programs that the gifted can be expected to encounter, if accelerated, are designed for the mainstream student at that level. Although evidence from research supports the success of talented students in such courses, one must be reminded that for the most part these evaluations reflect a student's ability to perform on traditional, convergent-production tasks. These evaluations can be expected to neglect an important component of giftedness, that of divergent-production tasks. Reducing the student's learning of mathematics to mere logic is an effective way to stifle creative mathematical thought. A student whose creativity is stifled may not continue in mathematics long enough to learn to enjoy it and to contribute to the field of his talents. Furthermore, students who have experienced programs of acceleration have been found to have superficial mathematical understandings and insights and to have gaps in their programs of study. They also have been denied the opportunity to develop their innate abilities of divergent thinking and creativity, characteristic of talented people, particularly of mathematicians and scientists. They have indeed had the opportunity for the study of "average" material sooner, only to have an "average" education.

If, however, programs of enrichment merely reduce "more of the same," and are irrelevant to the student's development of higher intellectual processes, then support of acceleration in the average, mainstream program becomes a more likely alternative compared to that which can be expected to bore the student and reduce his intellectual activity from brilliance to mediocrity.

May we not debate the issue of enrichment vs. acceleration. Special content properly organized and presented can be done in any number of environments and management systems. The more difficult problems of research and development lie in quality curriculum enrichment--enrichment that provides the needed depth and stimulation of the intellectual ability of gifted mathematics students at their level of maturation and interest.

SOME REFLECTIONS ON THE ACCELERATION-ENRICHMENT CONTROVERSY

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Let me begin by underscoring a point made by several speakers; acceleration and enrichment are neither unitary nor mutually exclusive approaches to the education of gifted children. There are many variants of each and many combinations of the two. Several examples can be found in the Study of Mathematically Talented Youth, conducted by Julian Stanley and his associates, as well as in Elizabeth Kearney's description of the California programs, to cite only two illustrations. The optimal variant or combination depends not only on the intellectual, emotional, and physical variable of the individual child but also on the child's own interests, wishes, and initial response to the program. I trust that noone would recommend continuing a program of acceleration, enrichment, or both if it clearly makes the child unhappy. What I would urge is not moderation but rather individualization.

Acceleration ought never to mean "pushing." It should mean "stop pulling back." In the same spirit, enrichment activities should fit the child's interests and utilize his strengths. From the standpoint of mental health, the individual should be given opportunities to pursue activities that interest him and in which he can succeed. But notice that the more closely the content of enrichment matches individual interest and talents, the closer it approaches acceleration. If a child is already mathematically talented, enriching his program with more math places him even farther ahead of his age and grade peers in this area.

Suppose, on the other hand, that the content of enrichment is chosen with the opposite goal in mind -- that of broadening the scope of the child's activities. In this connection it is noteworthy that large-scale surveys have consistently shown gifted children as a group to have characteristically broad interests. In some cases they

even run the risk of diffusing their energies too widely and hence need help in focusing and channeling their activities. Some advocates of enrichment, however, seem to imply that we should seek out an area in which the child shows little interest and talent, and "enrich" his life by giving him more in that area. This is a form of lateral enrichment based on the spinach theory. You give it to the child because it's supposed to be good for him. I don't think I need to spell out what such an approach is likely to do both to the child's liking for the area and to his mental health.

In order to cope with the continuing knowledge explosion in all fields, we need specialization and an early focusing of educational efforts. The person who sets out to be a Renaissance man today is likely to end up as a dilettante. Formal education, based on what is known at the time, should be completed as early as possible. Otherwise, much will have to be unlearned after graduation. The rapid accumulation of knowledge makes life-long education essential for leadership in any intellectual field. The process of growing to maturity in today's world includes a succession of choices between what we can and what we cannot afford to master -- between what can and what cannot be fitted into one lifetime.

Statement prepared for the Symposium on Educational Acceleration of Intellectually Talented Youth, Annual Meeting of the American Educational Research Association, April 7, 1977.

BRIEF PAPER FOR SYMPOSIUM ON THE EDUCATIONAL ACCELERATION OF INTELLECTUALLY TALENTED YOUTH

Joan S. Stark

This paper is written from my dual vantage point as 1) a college administrator and educational researcher who has done some minor studies of educational acceleration in the distant past, and 2) the mother of a radically accelerated student. It is my intent to suggest two areas of investigation which seem not to have been pursued in Professor Stanley's SMPY program but which I believe important in learning to facilitate the progress of gifted youth who enter college at a young age. Not surprisingly, the concerns which I believe merit investigation relate to my concerns about the education of students who pursue college studies at the typical age as well.

My first proposal is that an apprenticeship program as a method of meeting initial acceleration needs of brilliant youth might be superior to the pursuit of a random selection of college courses on a part or full time basis. This hypothesis is based on assumptions that some college teachers are better suited than others to deal with intellectually talented students and that these teachers can be identified by their attitudes toward students and toward the educational process.

The efforts of the SMPY are based largely on the assumption that early college work is better for brilliant youth and the project has amply demonstrated that selected students can progress well at a young age. College work is presumed better because it is more stimulating intellectually than that which can normally be pursued in junior high or high school. Additionally, there is some evidence that some high school teachers are not receptive to the needs of talented youth or, on the basis of negative stereotypes, they may even be antagonistic or threatened. Research done by the SMPY investigators indicates, too, that the success of junior high youth in accelerated mathematics classes is greatly facilitated by carefully selected, dynamic teachers who teach at a fast pace but value individuality and have a genuine respect for students.

It seems to me incongruous to report that teacher style is important in an experimental situation and at the same time assume that college work will provide stimulation merely because the subject matter is advanced, while neither measuring nor taking into account the characteristics of college teachers expected to provide the stimulation. My recent research on educational attitudes of college faculty and personal observation lead me to believe that if college work stimulates the radical accelerant it may do so in spite of the college teachers.

Students who take courses at a large university likely will be taught, initially, by poorly compensated graduate assistants with minimal experience and little incentive to dedicate themselves to the teaching task. Further, it has been well-documented that out-of-class faculty-student interaction is likely to be infrequent at a large university, at least in the lower division program. Lastly, individual learning activities customarily are not maximized in colleges; with a few exceptions for personalized instruction experiments, the lecture method prevails.

Under such conditions one might look to the small college which prides itself on the teaching role and on individual attention to students. Yet, in a current study of 287 faculty in six liberal arts colleges, I have found that 76% believe that unless motivated by grades students will not study, 63% feel that students do not learn well when studying on their own, 60% do not expect students to dig deeply into topics in which they are interested, and 52% do not believe that students should pursue their own interests. These and similar attitudes common even among professed teaching faculty seem antithetical to the kind of teaching brilliant students might expect to receive in college courses. I would conjecture that many of the successful radically accelerated students who are at college full time have sought and found relationships with particular professors who have the characteristics necessary to keep the spark of learning lighted and, further, that such students merely tolerate the other classroom professors who perform their roles lackadaisically. Developing such a relationship is more difficult if a student begins acceleration on a part-time commuting basis. If appropriate professors can be identified, as I believe they can, one might well assign intellectually talented students to work with such teachers as apprentices to give them a meaningful anchor point in the university apart from just enrolling in a course or two.

My second proposal is related. In general, our society does a poor job of preparing adolescents and young adults for the transition from school to work. This transition is a particularly crucial one for youth who finish college at 16 or 17. WE should not only study the difficulties which current accelerants might encounter but seek opportunities to ease the transition in order to promote appropriate career choices. Our labor laws, originally designed to protect youth, now allow a fifteen-year old mathematically precocious youngster to lift heavy grocery bags in sub-zero temperatures but not to program a computer or plan an electronic circuit in an industrial setting where he/she might explore potential scientific careers. The SMPY has reported that the radical accelerants with whom they have worked have a meaningful self-image, are inter-

personally effective, socially mature and well-equipped to meet challenges. One challenge which needs to be confronted is the opportunity to use one's skills in a setting other than the classroom. For example, the contrast between the investigative world of college and the work-a-day world where employees pace themselves to complete a minimum of tasks is difficult, but it is a maturation experience which should not be neglected. Efforts to facilitate appropriate employment and the study of accelerants in such settings seem as important as facilitation of year around study which may provide too little variation for the self-motivated accelerant. An important next step in investigating progress of intellectually talented youth who pursue accelerated study would be the provision of planned work experiences and longitudinal case studies of adaptation.

ACCELERATION VERSUS ENRICHMENT ---

THE TENTH RULE OF THREE CUBED.

by Albert K. Kurtz
1810 Ivy Lane, Winter Park, Florida

Since I am the last member of the last section of this symposium, I shall be brief {because our time {is running / has run} out / despite the fact that there is still some time left.} Besides, I planned for this, so my talk would have been short anyway. Hence, I shall quickly do what Dr. Stanley asked me to do -- state my positions on acceleration and on enrichment. That's easy.

First, I'm for acceleration. Why? So that the greatest minds in our country can develop their talents to whatever extent they wish. I hope the teachers in our public schools will encourage these gifted children, enabling them to complete the 12 grades in what is for them the proper length of time. But at least, let us no longer allow the teachers to deter bright children from attaining what are for them simply normal and eminently reasonable objectives. What are these objectives? I'll give you an example. Let's say a boy with an IQ of 120 lives next door to a bunch of children all having IQ's of 100. When he is 5 years old with a mental age of 6, his knowledge is equal to that of the 6 year old. Every time a year goes by, he learns 20% more than the child next door. When he reaches 10 he has a mental age of 12. When he reaches 15, we have a little problem on which Terman and Wechsler disagreed about when mental ages reach their peak, but until that time he will have continued to learn about 20% more each year and will have accumulated about 20% more knowledge than the 15-year-olds next door, whether or not he then has a mental age of <u>exactly</u> 18 years.

The Tenth Rule of Three Cubed. The average child (and far too many bright ones) graduates from High School at 18.
We just saw that a child with an IQ of 120 could set graduation at age 15 as an eminently reasonable objective; he'd know as much as the average

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18-year-old. But what about other bright students? The tenth rule of three cubed gives the answer. It works this way. Take one-tenth of the IQ, subtract it from 3^3, and get the eminently reasonable graduation age. Thus, when we subtract one-tenth of 120, or 12, from three cubed, or 27, we get 15, just as we did before. This simple rule works for nearly all bright kids. For all IQ's from 115 to 157 we either get the theoretically exact value or miss it by no more than a month or two.

Thus, as any of Dr. Stanley's mathematically talented youths have long since figured out, I feel that students with IQ's of 120, 130, 140, or 150 should have no trouble in graduating from high school at ages 15, 14, 13, or 12, respectively. Yes, that says that Terman's gifted children could well have graduated at 13 years -- as some of them did. Many others could have -- and should have.

Let us now turn very briefly to my position on enrichment -- as if you didn't know. I'm thoroughly fed up with this (vulgar expletive deleted) about age-mates. I have a one-word comment on enrichment -- the same one Gen. McAuliffe gave 33 years ago: Nuts!

AKK:bc
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